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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,124	03/27/2001	Toshiyuki Sudo	2355.12213	8950

5514 7590 02/26/2004

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EXAMINER

PAPPAS, PETER

ART UNIT	PAPER NUMBER
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2671

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/817,124

Applicant(s)

SUDO ET AL.

Examiner

Peter-Anthony Pappas

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a "3D image reproducer" and "area indicator board" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 5-6, 8, 17-18 and 20 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

4. In regards to claims 5 and 17 the "area indicator board" and "shot together" is essential to the practice of the invention, but is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Applicant discloses an area board which is used to establish bounds for clipping. See page 5, lines 16-17, and page 14, lines 8-17. However it is not clear what said area board is nor is it clear what function the "area indicator board" serves. Similar language appears in claims 6 and 18. It is unclear as to whether said "area indicator board" and said area board are the

same, separate or totally difference from one another. Additionally, applicant discloses that said area board is "shot together" with object 2. See page 5, lines 7-9, and page 14, lines 8-17. However, it is unclear as to what is meant by "shot together." For prior art purposes "an effective area," as disclosed in claim 5 and 17, is interpreted as the area (both immediate and surrounding) which a given object exists. Additionally, for prior art purposes "shot together," as disclosed in claims 5 and 17, is interpreted as combined.

5. In regards to claim 6 and 8 said claims are rejected as being dependent upon claim 5.

6. In regards to claims 18 and 20 said claims are rejected as being dependent upon claim 17.

7. Thus, one of ordinary skill in the art would be unduly burdened to make or use the claimed invention.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 5-8, 12, 17-20 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claims 5 and 17 recite the limitation "the object" on page 24, line 4, and page 27, line 26, respectively. There is insufficient antecedent basis for the limitation in the respective claim.

11. Claims 6 and 18 are unclear as to what is meant by the use of the word "virtually," on page 24, line 8, and page 28, line 3, respectively. This is unclear to such a degree that a reasonable interpretation cannot be ascertained and therefore no determination regarding allowability can be made.

12. Claims 7, 8, 19 and 20 recite the limitation "the imaging system" on page 24, lines 14, page 24, line 20, page 28, line 9, and page 28, line 17, respectively. There is insufficient antecedent basis for the limitation in the respective claim.

13. Claims 12 and 24 recite the limitation "said viewing points" on page 26, line 18, and page 30, line 14, respectively. There is insufficient antecedent basis for the limitation in the respective claim.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

15. Claims 1-2, 5, 9-10, 12-14, 21-22 and 24-25 are rejected under 35 U.S.C. 102(a) as being anticipated by Osaka et al. (U.S. Patent No. 6, 023, 277).

16. In regards to claim 1 Osaka et al. teaches the an object of the present invention is to provide a display control apparatus (system). See column 4, lines 43-50. Osaka et al. teaches in Fig. 23 a stereoscopic image display device (3-D image reproducer). See column 23, lines 8-9. At least two parallax images are divided up into pixels and are stored in horizontal stripes of a stripe image, which is used to generate a viewable

stereoscopic image. See column 24, lines 1-27, and Fig. 24A-B. It is noted that the processing of said multiple parallax images for the use in generating a viewable stereoscopic image is considered to be accomplished through the utilization of at least one processor, implemented in hardware, software or a combination of the two, and as such said division of parallax images by said processor is considered to be a 3-D image reproduction data generator. Fig. 22A-B teach a plurality of rays directed by a stereoscopic image display device at an observer's one eye, which intersect at a single point, for the display of a stereoscope 3-D image. See column 23, lines 16-45.

17. In regards to claim 2 Osaka et al. teaches a 3-D image is synthesized from a plurality of parallax images of a plurality of viewpoints. See column 26, lines 40-43. Fig 22A-B teach six blocks (ray sources) of mask 207, which are passed through lenticular sheets 40 and 41, in alignment with six respective pixel blocks of LCD 1 identified as R.

18. In regards to claim 5 Osaka et al. teaches the use of a mask pattern 207, which is a stripe image. See column 24, lines 22-27, and Fig. 22A-B. A stripe image is created by alternately arraying the stripe pixels obtained from parallax images. See column 26, lines 47-54, and Figs. 24A-B. It is noted that a mask pattern 207, which is created through the combination of parallax image pixel data taken of a given object (the object), is considered an area indicator board that limits the effective area for 3-D representation of said given object, because the display of said 3-D representation is limited (bound) by the dimensions of said mask pattern 207. As such the mask pattern 207 represents a combination of both said given object and its respective area as well as the respective relevant surrounding area of said object.

19. In regards to claim 9 the rationale disclosed in the rejections of claims 1 and 2 are incorporated herein. It is noted that the single intersection point of rays at an observer's one eye is considered to be part of a plane and thus is considered located near the observer. Additionally, viewing points are considered the number of ray sources. Osaka et al. teaches the use of a mask pattern 207, which is a stripe image. See column 24, lines 22-27, and Fig. 22A-B. A stripe image is created by alternately arraying the stripe pixels obtained from each of the parallax images. See column 26, lines 47-54, and Figs. 24A-B. The creation of said ray sources are thus dependent upon the stripe image, which is in turn dependent on the parallax images.

20. In regards to claim 10 Osaka et al. teaches a 3-D image is synthesized from a plurality of parallax image of a plurality of viewpoints. Each parallax image is divided up into pixels, according to the respective parallax image being divided, and a strip image is created by alternately arraying the strip pixels. See column 26, lines 42-54, column 24, lines 22-27, and Figs. 24A-B.

21. In regards to claim 12 the rationale disclosed in the rejection of claims 2 and 10 are incorporated herein.

22. In regards to claim 13 Osaka et al. teaches the an object of the present invention is to provide a display control method. See column 4, lines 43-50. It is considered that the system is performing the method. The rationale disclosed in the rejection of claim 1 is incorporated herein.

23. In regards to claim 14 the rationale disclosed in the rejection of claim 2 is incorporated herein.

24. In regards to claim 21 the rationale disclosed in the rejection of claim 9 is incorporated herein.

25. In regards to claim 22 the rationale disclosed in the rejection of claim 10 is incorporated herein.

26. In regards to claim 24 the rationale disclosed in the rejection of claim 12 is incorporated herein.

27. In regards to claim 25 Osaka et al. teaches in FIG. 27 the configuration of a computer system, including a CPU and memory (computer-readable storage medium), which stores a control program (program code) for implementing a processing procedure. See column 7, lines 7-8, and column 15, lines 3-5.

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

29. Claims 3-4, 11, 15-16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka et al. (U.S. Patent No. 6, 023, 277), as applied to claims 1-2, 5, 9-10, 12-14, 21-22 and 24-25.

30. In regards to claims 3 and 4 Osaka et al. fails to explicitly teach the clipping, through trimming, of an effective area (image representative of a 3-D scene for display on a display device – i.e. LCD) for generating said 3-D image reproduction data and then stretching or shrinking said trimmed image.

It would have been obvious to one skilled in the art, at the time of the applicant's invention, to crop (clip/trim) portions of an image, representative of a 3-D scene on a display device, and then stretch or shrink said image respective to the said display device, because through cropping better resolution for a given area of interest which is the result of other elements of said image being cropped can be achieved, thus enhancing the clarity of said scene. Through the use of stretching or shrinking said image, post crop, the image will achieved further viewability by having the dimensions of the new image set to those of the dimensions of the display device so that the amount of the image desirable for being viewed is maximized regardless of the display device it is displayed on.

31. In regards to claim 11 the claim appears to say nothing more then $Q(m,n)$, a two-dimensional parallax image array, is assigned the value from $P(m,n)$, a two-dimensional image array. Osaka et al. teaches a 3-D image is synthesized from a plurality of parallax images of a plurality of viewpoints. See column 26, lines 40-43. At least two parallax images are divided up into pixels and are stored in horizontal stripes of a stripe image, which is used to generate a viewable stereoscopic image. See column 24, lines 1-27, and Fig. 24A-B.

It would have been obvious to one skilled in the art, at the time of the applicant's invention, to store a 2-D image (i.e. a parallax image) in pixel form into a two-dimensional image array, with array bounds based on width and height of the respective 2-D image, because it is conventional to store digital images in memory in such a form as an array, wherein said array has dimensions corresponding to the levels of

dimensions of the respective image data that is to be stored. Furthermore, it would have been obvious to one skilled in the art, at the time of the applicant's invention, to allow for the copying of image data between identically bounded (i.e. two-dimensional) arrays, because said copying would allow data from each array (i.e. pixel data) to more easily be copied to a corresponding location in the second array and thus would provide a secondary storage location (i.e. buffer) in memory for which to store said image while another image was loaded stored in the original array.

32. In regards to claims 15-16 the rationale disclosed in the rejection of claims 3-4 are incorporated herein.

33. In regards to claim 23 the rationale disclosed in the rejection of claim 11 is incorporated herein.

34. Claims 7-8 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka et al. (U.S. Patent No. 6, 023, 277), as applied to claims 1-2, 5, 9-10, 12-14, 21-22 and 24-25, in view of Ishikawa et al. (U.S. Patent No. 6, 549, 650 B1).

35. In regards to claim 7 Osaka et al. teaches that in addition to the display of 3-D stereoscopic images, 2-D images can be also viewed in the same manner as presented by an ordinary 2-D display. See column 19, lines 46-50. It is noted that the means by which this switching of display modes is accomplished varies according to the embodiment. Osaka et al. teaches a 3-D image is synthesized from a plurality of parallax images of a plurality of viewpoints. See column 26, lines 40-43. Osaka et al. fails to explicitly teach the locations of the viewing points move in the imaging system such that the optical axis (lens) of the imaging system will move in parallel. Ishikawa et

al. teaches two able to be rotated image sensing optical systems 6701a and 6701b, which are set to have no convergence and as such are set parallel to each other. It is noted that the optical axis for a respective image sensing optical system is considered to be defined by the orientation of its lens. Ishikawa et al. teaches that a system such as the one shown in Fig. 1, with parallax d and no convergence, is best suited for the display of stereoscopic display. See column 3, lines 1-67, and column 4, lines 1-62. Thus, for best viewability for stereoscopic images one would ideally want no convergence and parallax to be present in a given system.

It would have been obvious to one skilled in the art, at the time of the applicant's invention, to utilized image sensing optical systems as taught Ishikawa et al. in the system disclosed by Osaka et al. for the capture of parallax data used to display 3-D stereoscopic images, because by utilizing an orientation of image sensing optical systems as taught by Ishikawa et al. one would achieve a greater quality of captured data with parallax, which could be captured, and used for the display of 3-D stereoscopic images created from said data.

36. In regards to claim 8 Osaka et al. teaches that in addition to the display of 3-D stereoscopic images, 2-D images can be also viewed in the same manner as presented by an ordinary 2-D display. See column 19, lines 46-50. It is noted that the means by which this switching of display modes is accomplished varies according to the embodiment. Osaka et al. teaches a 3-D image is synthesized from a plurality of parallax images of a plurality of viewpoints. See column 26, lines 40-43. Osaka et al. fails to explicitly teach the locations of the viewing points move in the imaging system

such that the optical axis (lens) of the imaging system will always pass through the center of said effective area. Ishikawa et al. teaches two able to be rotated image sensing optical systems 6701a and 6701b, which are set to have convergence and are rotated by an amount defined by said convergence. It is noted that the optical axis for a respective image sensing optical system is considered to be defined by the orientation of its lens. Ishikawa et al. teaches that a system such as the one shown in Fig. 2, with convergence and no parallax, make obtaining a stereoscopic not possible. See column 3, lines 1-67, and column 4, lines 1-62. Thus, for best viewability for non-stereoscopic images one would ideally want no parallax and convergence to be present in a given system.

It would have been obvious to one skilled in the art, at the time of the applicant's invention, to utilized image sensing optical systems as taught Ishikawa et al. in the system disclosed by Osaka et al. for the capture of data used to display 2-D images, because by utilizing an orientation of image sensing optical systems as taught by Ishikawa et al. one would achieve a greater quality of captured data without parallax and thus without stereoscopic features, which could be captured, and used for the display of 2-D images created from said data.

37. In regards to claim 19 the rationale disclosed in the rejection of claim 7 is incorporated herein.

38. In regards to claim 20 the rationale disclosed in the rejection of claim 8 is incorporated herein.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter-Anthony Pappas whose telephone number is 703-305-8984. The examiner can normally be reached on M-F 9:30am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on 703-305-9798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Peter-Anthony Pappas
Examiner
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PAP


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